

Surgical Planning for Mohs Defect Reconstruction in the Digital Age

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Planning for Mohs defect reconstruction is an integral part of fellowship training. Use of a digital drawing program prior to the procedure can be a time-saving and cost-efficient method for surgical planning. It also fosters active engagement in learning through a collaborative and comprehensive discussion of reconstructive options.

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Practice Gap

An essential part of training for a micrographic surgery and dermatologic oncology fellowship and scope of practice involves planning and execution of reconstructive surgery for Mohs defects. Recently, a surgical pearl presented by Rickstrew and colleagues¹ highlighted the use of different colored surgical marking pens and their benefit in a trainee-based environment.

Delineating multiple options for reconstruction with different colored markers on live patients allows fellows in-training to participate in surgical planning but introduces more markings or drawings that need to be wiped off during or after surgery, potentially prolonging operative time. Furthermore, the Rickstrew approach has the potential to (1) cause unnecessary emotional distress for the patient during surgical planning and (2) add to the cost of surgery with the purchase of various colors of surgical markers.

Technique

To improve patient experience and trainee education, we propose fine-tuning the colored marker approach by utilizing a digital drawing program for surgical planning prior to the procedure. We recommend Snip & Sketch—

a free, readily accessible digital annotating application that runs on the Microsoft Windows 10 operating system (<https://www.microsoft.com/en-us/p/snip-sketch/9mz95kl8mr0l#activetab=pivot:overviewtab>)—to mark up screenshot photographs of postoperative Mohs defects from the electronic medical record.

Using Snip & Sketch, the fellow in-training can then use, for example, a green “digital pen” to draw on the captured image and plan their surgical repairs (Figure 1) without input from the attending physician. Different colored pens can be used to highlight nerves, vessels, relaxed skin tension lines, and tension vectors associated with flap movement.

Subsequently, the attending physician, using a different color digital pen—say, blue—can design alternative reconstructive options (Figure 1). Suture lines also can be drawn to outline the predicted appearance of surgical scars (Figure 2).

Then, the attending physician and fellow in-training brainstorm and discuss the advantages and disadvantages of each reconstructive option to determine the optimal approach to repairing the Mohs defect.

Advantages and Disadvantages

The main advantage of using a digital drawing program is that it is time-saving and cost-efficient. Digital planning also spares the patient undue anxiety from listening to the discussion on each repair option.

The primary downside of digital surgical planning is that it is 2-dimensional, thus providing an incomplete representation of a 3-dimensional cutaneous structure. In addition, skin laxity, flap mobility, and

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FIGURE 1. Mohs defect and reconstructive options designed by a fellow in-training (spiral flap in green) and attending physician (melolabial interpolation flap in blue).

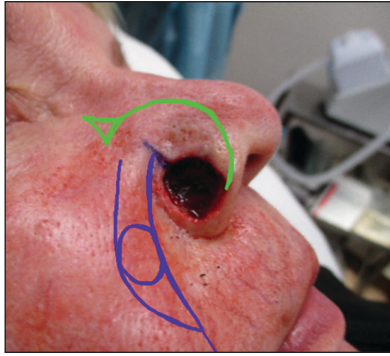
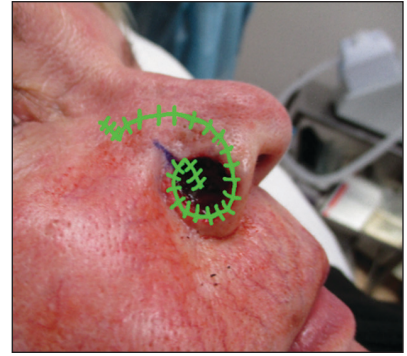


FIGURE 2. Predicted appearance of a surgical scar from Mohs defect reconstruction.



free-margin distortion cannot be fully appreciated on a 2-dimensional image.

Despite these drawbacks, digital surgical planning provides trainees with an active learning experience through a more collaborative and comprehensive discussion of reconstructive options.

Practice Implications

Active learning using an electronic device has been validated as a beneficial addition to Mohs micrographic surgery training.² Utilizing a digitized annotating program for surgical planning increases

the independence of trainees and allows immediate feedback from the attending physician. The synergy of digital technology and collaborative learning helps cultivate the next generation of confident and competent Mohs surgeons.

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